



VSA MYP Mathematics Year 10 Topic Planner

(Extended Maths Objectives highlighted)

Time for this unit: 10 to 11 weeks (5 lessons per week. 50 mins/lesson)

Weeks	Topic	General Aims By the end of this unit students should be able to:	Specific VSA Learning Objectives By the end of this unit students should know/be able to:	Main Resource(s)
	Growing Things (Exponentials & Logarithms)	Understand the nature of exponential growth Understand that the log function is the inverse of an exponential Recognise sequences and connect them to their generator. Appreciate real-life contexts for	Comfortably use rules of indices (covered in Y9) Understand the properties of the function $y = a^x$ Solve problems such as $a^x = b$ graphically and with the use of technology Graph the function $y = a^x$ Recognise real-world examples of exponential growth (population, money etc.) Understand the equivalence of $a^b = c$ and $\log_a c = b$ Use and apply the rules of logs	New Trend Mathematics 4B (Ch10, Ch11); 5A (Ch14); MEP GCSE Booklets New Trend Mathematics (Teachers CD + DVD) Supported Resources

15 to 26	Logarithms; Arithmetic & Geometric Sequences and Series; Line of Best Fit)	<p>phenomena best-described by exponential or logarithmic functions</p> <p>Appreciate the basic descriptive ideas of arithmetic and geometric progressions</p> <p>Understand the ability of APs and GPs to model growth seen in everyday life.</p> <p>Appreciate that technology can plot the line (or curve) of best fit</p> <p>Appreciate the importance of correlation coefficient</p> <p>Appreciate that correlation is not the same as “cause + effect”</p>	<p>Use logs to solve $y = a^x$</p> <p>Convert from an exponential to a linear graph</p> <p>Know and appreciate basic facts about the number e</p> <p>Work with natural logarithms</p> <p>Solve equations of the type $e^{bx} = a^x$</p> <p>Know, understand and use key vocabulary (<i>term, progression, sequence, series, sum, generator, difference, ratio, common</i>) related to sequences and series</p> <p>Find the n^{th} term of an AP via $T(n) = a + (n - 1)d$</p> <p>Find the sum to n terms of an AP via: $S(n) = n/2[2a + (n - 1)d] \quad \text{and/or} \quad S(n) = n/2[F + L]$</p> <p>Recognise and manipulate real-life examples of AP growth – eg Simple Interest</p> <p>Find the n^{th} term of a GP via $T(n) = ar^{n-1}$</p> <p>Find the sum to n terms of an GP via: $S(n) = \frac{a(r^n - 1)}{r - 1}$</p> <p>Appreciate the importance of the value of r in determining if a GP can have a sum to infinity</p> <p>Use $S = \frac{a}{r - 1}$ for $-1 < r < 1$</p> <p>Recognise and manipulate real-life examples of GP growth – eg Compound Interest</p> <p>Plot scatter graphs of bivariate data</p> <p>Describe scatter graphs as showing no/weak/strong/perfect correlation (negative or positive)</p> <p>Appreciate that the line of best fit (if of the form $Y = mX + c$) will pass through the point (\bar{X}, \bar{Y})</p> <p>Appreciate that a correlation coefficient r acts as a numerical indicator of the strength of a relationship</p> <p>Appreciate the significance of r^2</p> <p>Draw (by eye) the line of best fit</p> <p>Have some appreciation of how a software programme plots the line of best fit (method of least squares)</p> <p>Find the equation of line of best fit of a set of data using a GDC</p>	<p>Various worksheets</p> <p>Mathletics</p> <p>Financial Reports</p> <p>www.interactivemaths.net/</p>
Guiding Question	Main Areas of Interaction Focus		Learner Profile	
How do things grow (or decay?)	Environments – How can we use our knowledge of the “mathematics of growth” to explain various threats to the environment – the so-called “human footprint”?		Communicators – using mathematical language and symbols to explain limited resources	
	Technology		Knowledgeable – Understanding important local issues	
			Assessment(s)	

	Use of spreadsheets to generate terms of a sequence Using the LIST function of a GDC Curve-fitting on GDC Curve-fitting with Geogebra Internet research	AP, GP, exp, log (Criteria A, D)
	Embedded Enquiry	Cross-curricular Links
	Researching local government figures on waste production	Modelling the growth of the “value” of a company (Humanities)
ATL	Problem Solving & Thinking Skills: Independently construct a number of plans to tackle a problem, and identify the most suitable plan. Reflection Skills: Explain the reasonableness of the answers obtained and find the most reasonable result.	